

Hudson Bay Mining and Smelting Co., Limited

Annual Report 1970

Fell



Forty-third
annual meeting
of shareholders

April 30, 1971,
at the Royal York Hotel,
Toronto, Canada

A request for proxies
will be mailed to all shareholders
during the latter part of
March, 1971.

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cover photo	The world's first four-rotor potash mining machine is being tested prior to joining a sister machine underground at Sylvite of Canada, a division of Hudson Bay Mining, near Rocanville, Saskatchewan. In the background is the refinery.

Hudson Bay Mining and Smelting Co., Limited

Directors and Officers

Directors

E. S. Austin

Toronto
President, Hudson Bay Mining

C. W. Engelhard

Newark, N.J.
Chairman, Engelhard Minerals & Chemicals Corporation

G. M. Francis

West Engelwood, N.J.
Director, Whitney Industries, Inc.

W. A. Green

Riverside, Conn.
Retired

A. T. Lambert

Toronto
Chairman and President, The Toronto-Dominion Bank

J. F. McCarthy

Old Greenwich, Conn.
Retired

H. C. F. Mockridge, Q.C.

Toronto
Senior Partner, Osler, Hoskin & Harcourt

G. W. H. Relly

Toronto
Chairman, Hudson Bay Mining

M. W. Rush

Johannesburg, South Africa
Director, Hudson Bay Mining

C. V. Whitney

New York, N.Y.
President, Whitney Industries, Inc.

Officers

G. W. H. Relly, Chairman of the Board

E. S. Austin, President

W. A. Morrice, Executive Vice-President

H. A. McKenzie, Executive Vice-President

C. O. Buchanan, Vice-President - Metal Sales

L. W. Ogryzlo, Vice-President - Exploration

Dr. C. L. Sarthou, Vice-President - Marketing (Sylvite Division)

K. S. Dalton, Treasurer

J. L. Carpenter, Secretary and General Counsel

G. A. C. MacRae, Comptroller

S. A. Hayward, Assistant Secretary and Assistant Treasurer

Comparative financial highlights

1970 1969

Operating revenue	\$ 87,160,970	\$95,674,349
Investment and other income	1,765,199	2,238,424
Net earnings	19,563,052	29,698,514
Working capital	31,947,459	35,773,868
Marketable securities	2,541,190	5,592,645
Investments in other companies	10,057,664	10,264,925
Retained earnings	104,025,535	95,160,717
Earnings per share	2.16	3.29
Dividends per share	1.18½	1.46½

Offices* Transfer agents Registrars Auditors

Hudson Bay Mining and Smelting Co., Limited, P.O. Box 28, Toronto-Dominion Centre, Toronto 1, Ontario	Head Office
Flin Flon, Manitoba Rocanville, Saskatchewan Whitehorse, Yukon Territory	Mine offices
Toronto, Vancouver, Flin Flon Whitehorse Thunder Bay "P", Ont.	Exploration offices
The Royal Trust Company, Montreal, Toronto, Winnipeg, Calgary, Regina, Vancouver Morgan Guaranty Trust Company of New York, New York, N.Y.	Transfer agents
Montreal Trust Company, Montreal, Regina Crown Trust Company, Toronto, Winnipeg, Calgary, Vancouver The Chase Manhattan Bank, New York, N.Y.	Registrars
Deloitte, Haskins & Sells, Toronto	Auditors

* Addresses of principal
Canadian companies
in the Hudson Bay
Mining Group are listed on
the inside back cover

Report of the Directors

Earnings

Net earnings of \$19,563,052 during 1970 were 34% lower than in 1969 but still the fifth highest in the history of the Company.

Earnings per share were \$2.16, compared with \$3.29 in the previous year.

Several factors contributed to the decline in earnings, including lower metal prices, higher operating costs, reduced gain on sale of investments, and lower revenue from exports due to the unpegging of the Canadian dollar.

Dividends

A dividend of 28⅓¢ per share was paid by the Company in March, and dividends of 30¢ per share in June, September, and December, calculated on the basis of the 3-for-1 stock split authorized by shareholders on April 24, 1970. No year-end dividend was declared in 1970 in view of the lower earnings position of the Company, the continuing weakness of copper prices, and the need to conserve funds to finance the opening up of new mining operations.

Total dividend disbursements during the year were \$10,698,234, equivalent to \$1.18⅓ per share, compared with \$13,252,815 or \$1.46⅔ per share in 1969.

Ore reserves

Flin Flon-Snow Lake area: Proven reserves of copper-zinc ore in the Company's mines at Flin Flon and Snow Lake increased for the fourth successive year and at year-end were the highest since 1957, totalling 19,115,100 tons, assaying Au, 0.04 oz. per ton; Ag, 0.6 oz. per ton; Cu, 2.9%; and Zn, 3.3%. At the end of 1969 ore reserves totalled 18,048,600 tons. New ore outlined during the year at the various mines, particularly at the new Centennial Mine, exceeded the tonnage of ore mined by 1,066,500 tons.

Yukon area: At the Wellgreen property of Hudson-Yukon Mining Co., Limited, 202 miles northwest of Whitehorse, proven reserves of copper-nickel ore total 737,600 tons assaying Ni, 2.04%; and Cu, 1.42%. The Company owns 94% of the outstanding shares of Hudson-Yukon.

South Saskatchewan area: Proven reserves of potash ore, at the Company's wholly owned Sylvite of Canada property near Rocanville, total 314 million tons averaging 27.3% K₂O, of which 110 million tons would be recoverable at 35% extraction, as is common in Saskatchewan potash mines.

Prices

In the buoyant economic conditions of the past several years demand for copper has tended to outrun supply. This shortage has been accentuated by the long Vietnam war and by periodic strikes in the copper industry, in particular the nine-month strike by United States copper workers which ended in March, 1968. The consequent trend of high copper prices continued into 1970. However, during the second half of the year the situation changed abruptly. Prices declined sharply as production overtook demand and inventories increased.

All sales of copper outside of Canada were made on the basis of the London Metal Exchange cash settlement price. This price increased from the equivalent of 81.8¢ (Can.) per lb. at the start of the year to a peak of 88.3¢ (Can.) on March 26. The price held at close to peak levels for approximately one month and then declined steadily to a low of 46.6¢ (Can.). At year-end the L.M.E. price for copper was equivalent to 47.5¢ (Can.) per lb. The Canadian domestic price for copper wire bars was increased from 57¢ per lb. to 66¢ on January 2. Subsequently, on January 13, the price was rolled back to 57¢ as a co-operative measure to assist the Federal government in its endeavor to control inflation. On April 14 the government fixed the price of copper in Canada at 59¢ per lb., considerably below prices in other parts of the world. However, because of rapid price deterioration on the L.M.E. during the next few months, the Canadian price was reduced on October 23 to 57.3¢ per lb., and further reduced to 53.75¢ on December 3.

The zinc market was plagued by an oversupply situation throughout the entire year, a condition aggravated by the strike of employees of General Motors Corporation, and the general slowdown of the construction industry. Canadian and St. Louis prices for all grades of zinc were decreased from a base of 15.5¢ (Can.) and 15.5¢ (U.S.) per lb. to 15¢ (Can.) and 15¢ (U.S.), respectively, during August. The overseas producer price for Prime Western zinc held throughout 1970 at the Canadian equivalent of 14.1¢ per lb.

Cadmium prices in all world markets dropped markedly during 1970, declining from \$4.30 (Can.) per lb. at the start of the year to \$2.35 (Can.) at year-end.

The price of gold in London at the start of the year was approximately \$37.63 (Can.) per oz. The price held fairly steady throughout 1970 and at year-end was \$37.83 (Can.) per oz.

The Handy and Harman price for silver was \$1.98 (Can.) per oz. at the start of the year, and \$1.66 (Can.) per oz. at year-end. In the interim the price varied from a low of \$1.64 (Can.) per oz. to a high of \$2.07 (Can.).

During 1969 the Saskatchewan government established a floor price of \$20.25 (Can.) per ton (f.o.b. mine) for standard grade potash (60% of K₂O equivalent). This price remained in effect throughout 1970.

Markets

The geographical distribution of copper and zinc sales during 1970 was as follows:

	<u>Domestic</u>	<u>U.S.A.</u>	<u>Overseas</u>
copper	31%	—	69%
zinc	39%	25%	36%

Financial

Capital expenditures during 1970 totalled \$34,660,000, of which \$21,540,000 was spent on the Sylvite of Canada potash project. The remainder was utilized mainly for new mine developments in the Flin Flon-Snow Lake area and in the Yukon.

The entire capital construction program was financed by internally generated funds, with the Company remaining in a debt-free position at year-end.

Throughout the year the investment portfolio of stocks in leading Canadian companies was reduced as required to meet capital expenditure commitments. Capital gains from sale of stocks during the year amounted to \$460,820. The total market value of the stocks remaining in the portfolio at year-end was \$2,061,328, which was \$479,862 less than cost.

Working capital decreased to \$31,947,459 at year-end from \$35,773,868 at the end of 1969.

Taxation

During the year the Company submitted its views on the White Paper to the appropriate committees of the Senate and the House of Commons. Extensive representation made by the mining industry should result in some modification of the White Paper proposals, particularly in relation to "earned depletion." It is expected that a bill covering the matter will be introduced in 1971.

Capital structure

On April 24, shareholders of the Company approved a by-law providing for a 3-for-1 split of the capital stock. This resulted in an increase in the authorized capital of the Company from four million shares without nominal or par value to 12 million shares, of which 9,040,833 were issued and outstanding at year-end.

Shareholders

The number of shareholders of record as of December 31 was 16,077, compared with 14,875 at the same date in the previous year. Shareholders of Canadian registry numbered 12,080, holding 82% of the outstanding shares.

Special development group

A special development group of four engineers with extensive experience in mining and metallurgy, whose primary task is to evaluate the feasibility of new business opportunities, was formed during the year by the Company in conjunction with Anglo American Corporation of Canada Limited (Amcan). The development group will also conduct special studies aimed at improving operations of both companies, their subsidiaries and associates. A major advantage of this new association with Amcan, the major shareholder in the Company, is that the development group can augment its knowledge and skills by drawing on the pool of mining, financial and industrial expertise built up by Amcan's principals on a worldwide scale.

Outlook

There are evident difficulties facing the Company in 1971 as profit margins diminish due to lower metal prices and rising costs, particularly labor costs. Moreover, the Company is faced with the prospect of a lengthy shutdown of operations at Flin Flon and Snow Lake due to strike action on January 27, 1971, by 650 members of the Association of Flin Flon Trade Unions, representing machinists, electricians, boilermakers, carpenters, painters and bricklayers. The Trade Unions rejected the Company's offer of wage increases totalling approximately 30% over a three-year period, plus additional fringe benefits. A similar offer was accepted on September 11, by 1,600 union members of the United Steel Workers of America and the International Union of Operating Engineers.

It is evident that, at any level of prices in the future, the Company's earnings will be lower than in the past unless output can be expanded and greater efficiencies introduced. In this regard there are strong grounds for optimism, stemming from the following developments:

Ore reserves in the Flin Flon-Snow Lake area have been increased during the past few years, the result of an active and efficient exploration program. Consequently, studies are underway to determine the feasibility of increasing copper production by approximately 10%.

The Company has signed a joint research agreement with Sherritt Gordon Mines Limited to test the adaptability of a Sherritt Gordon-patented pressure-leach method to Hudson Bay Mining's zinc concentrates. The anticipated result of this program is a more efficient method of zinc production under pollution-free conditions.

Two new mines, Anderson Lake and Dickstone, were brought into production by the Company during November, 1970, increasing to eight the number of producing mines in the Flin Flon-Snow Lake area. Operations of both new mines will benefit fully from the three-year tax-free period. Three more mines are being developed: Ghost Lake and White Lake in the Flin Flon-Snow Lake area and the Wellgreen Mine in the Yukon. All three are scheduled to come into production during the first half of 1972 and will enjoy tax-free status until December 31, 1973.

The Company's \$70-million potash venture, Sylvite of Canada, financed internally, was brought into production on schedule and within budget. Even under the present unfavorable circumstances prevailing in the potash industry, Sylvite, with its fully modern facilities, should contribute positively to the Company's overall cash flow.

Extensive prospecting in various parts of Canada has indicated some interesting targets, which will justify a substantial drilling program in 1971.

Although the short-term outlook for 1971 is not encouraging, the Company, nevertheless, is in a sound position to sustain its present operations and to take advantage of new opportunities.

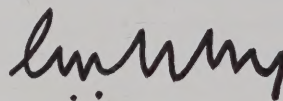
Directors

On April 24, 1970, Mr. G. W. H. Rely was elected Chairman of the Board, succeeding Mr. M. W. Rush, who returned to Johannesburg, South Africa. Mr. Rush remained on the Board as a Director.

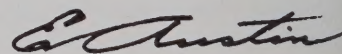
Appreciation

The Directors express their appreciation to management and employees for their loyalty, co-operation and constructive efforts, which have contributed significantly to the success of the Company during the past year. Special acknowledgment goes to those responsible for bringing the Sylvite of Canada potash project into production.

On behalf of the Board of Directors,



Chairman



President

March 1, 1971

Properties,
subsidiary
companies
and major
holdings



Consolidated statement of financial position

as at December 31, 1970

The accompanying notes
are an integral part of the
financial statements.

Hudson Bay Mining
and Smelting Co., Limited
and subsidiary
companies

1970

1969

Current assets

Cash	\$ 344,744	\$ 1,039,106
Short-term securities — at cost	9,168,543	14,434,538
Accounts receivable	10,427,234	11,593,179
Income taxes recoverable	3,265,494	—
Inventories (note 4)	15,010,418	16,385,014
Materials and supplies — at average cost	6,492,834	5,201,019
Total current assets	44,709,267	48,652,856

Deduct:

Current liabilities

Accounts payable and accrued liabilities	12,761,808	10,735,887
Income and other taxes payable	—	2,143,101
Total current liabilities	12,761,808	12,878,988

Working capital

31,947,459	35,773,868
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Add:

Marketable securities — at cost

(Market value 1970 — \$2,061,328; 1969 — \$6,154,593)	2,541,190	5,592,645
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Investments in other companies — at cost

Quoted (Market value 1970 — \$2,608,080; 1969 — \$4,172,066)	3,564,269	3,439,269
Unquoted	13,672,745	13,439,388
	17,237,014	16,878,657
Less provision for future write-offs	7,179,350	6,613,732
	10,057,664	10,264,925

Property, plant and equipment — at cost

Plant and equipment	128,072,803	104,040,544
Mineral and other properties	35,794,864	35,724,791
	163,867,667	139,765,335
Less accumulated depreciation and depletion	74,387,277	72,091,213
	89,480,390	67,674,122

Other assets

Unamortized mine development expenditures	39,977,018	35,699,799
Sundry assets and deferred charges — at cost	4,712,660	5,059,245
	44,689,678	40,759,044
Capital employed	178,716,381	160,064,604

Deduct:

Deferred income taxes (note 5)	22,796,000	14,883,000
Minority interests in subsidiaries	5,969,320	4,100,776
	28,765,320	18,983,776

Shareholders' investment

\$ 149,951,061	\$ 141,080,828
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Investment evidenced by:

Capital stock (notes 6 and 7)		
Authorized — 12,000,000 shares, no par value		
Issued and fully paid — 9,040,833 shares	\$ 45,925,526	\$ 45,920,111
Retained earnings	104,025,535	95,160,717

Total shareholders' equity

\$ 149,951,061	\$ 141,080,828
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Approved by the Board of Directors
Gavin W. H. Relly, Director
Eric S. Austin, Director

Consolidated statement of earnings

for the year ended
December 31, 1970

The accompanying notes
are an integral part of the
financial statements.

Hudson Bay Mining
and Smelting Co., Limited
and subsidiary
companies

1970

1969

Revenue

Sales of product	\$ 86,029,681	\$ 94,748,214
Less freight, refining and selling expenses	8,241,495	7,884,715
	<u>77,788,186</u>	<u>86,863,499</u>
Sales of power and tolls from treatment of custom concentrates	1,131,289	926,135
Income from investments	1,063,660	2,018,103
Other income	701,539	220,321
	<u>80,684,674</u>	<u>90,028,058</u>

Costs and expenses

Production costs	39,903,293	36,553,642
Amortization of mine development expenses	4,502,934	4,328,593
Depreciation and depletion	2,834,071	3,112,215
Provincial royalties	1,788,973	3,034,012
Exploration expenses	3,062,120	2,458,646
General administrative expenses	2,107,956	2,455,403
	<u>54,199,347</u>	<u>51,942,511</u>

Income taxes

Current	(1,760,000)	2,953,000
Deferred (note 5)	7,913,000	5,299,000
	<u>6,153,000</u>	<u>8,252,000</u>

Earnings from operations

20,332,327 29,833,547

Other income (deductions)

Gain on sale of investments	460,820	1,634,429
Provision for future write-offs of investments	(565,618)	(1,071,631)
	<u>(104,798)</u>	<u>562,798</u>

Net earnings before deducting minority interests

20,227,529 30,396,345

Minority interests in earnings of subsidiaries

664,477 697,831

Net earnings for the year

\$ 19,563,052 \$ 29,698,514

Earnings per share (note 6)

\$2.16 \$3.29

Consolidated statement of retained earnings

Retained earnings beginning of the year

\$ 95,160,717 \$ 78,715,018

Add net earnings for the year

19,563,052 29,698,514

114,723,769 108,413,532

Deduct dividends paid —

\$1.18½ per share (1969 — \$1.46⅔) (note 6)

10,698,234 13,252,815

Retained earnings end of the year

\$ 104,025,535 \$ 95,160,717

Consolidated statement of source and application of funds

for the year ended
December 31, 1970

The accompanying notes
are an integral part of the
financial statements.

Hudson Bay Mining
and Smelting Co., Limited
and subsidiary
companies

1970

1969

Source of funds

Operations:

Net earnings for the year before deducting minority interests	\$ 20,227,529	\$ 30,396,345
Depreciation, depletion and amortization of mine development expenditures	7,337,005	7,440,808
Provision for future write-offs of investments	565,618	1,071,631
Deferred income taxes	7,913,000	5,299,000
	<hr/> 36,043,152	<hr/> 44,207,784
Public issue of shares by subsidiary company	3,220,000	—
Sales of marketable securities	3,235,822	12,805,002
Issue of shares under options	5,415	323,190
Decrease (net) in sundry assets	346,585	(262,836)
	<hr/> 42,850,974	<hr/> 57,073,140

Application of funds

Dividends paid	10,698,234	13,252,815
Marketable securities purchased	184,367	1,243,804
Investments in other companies	358,357	5,091,218
Additions (net) to property, plant and equipment	25,880,021	16,761,107
Mine development expenditures	8,780,153	10,550,687
Other changes in minority interests	776,251	1,626,356
	<hr/> 46,677,383	<hr/> 48,525,987
Decrease (increase) in working capital	3,826,409	(8,547,153)
Working capital beginning of the year	35,773,868	27,226,715
Working capital end of the year	<hr/> \$ 31,947,459	<hr/> \$ 35,773,868

Notes to the consolidated financial statements

December 31, 1970

**Hudson Bay Mining
and Smelting Co., Limited
and subsidiary
companies**

1. Principles of consolidation

The consolidated financial statements include the accounts of Hudson Bay Mining and Smelting Co., Limited and all its subsidiaries. The 1969 comparative figures have been revised to reflect, on a consolidated basis, the accounts of those subsidiaries which were not consolidated in the 1969 financial statements. The revision of the 1969 figures had no effect on consolidated earnings or retained earnings.

2. Foreign exchange

Foreign currencies have been translated to Canadian dollars as follows: revenue and expenditure, non-current assets and liabilities at rates in effect at dates of transactions; current assets and liabilities at rates in effect at the end of the respective years.

3. Remuneration of directors and officers

The aggregate remuneration received by 10 Directors and 11 Officers, two of whom are both Directors and Officers, was as follows:

	1970	1969
As Directors	\$ 27,000	\$ 26,600
As Officers	521,000	501,705
	<u>\$548,000</u>	<u>\$528,305</u>

4. Inventories

	1970	1969
Inventories at December 31 comprise the following:		
Metals and crude oil, estimated sales value	\$12,707,054	\$14,621,049
Metal in process, at cost	1,268,611	1,066,380
Manufactured and other products (finished, in process and raw materials), at cost or net realizable value, whichever is the lower	1,034,753	697,585
	<u>\$15,010,418</u>	<u>\$16,385,014</u>

5. Deferred income taxes

Deferred income taxes represent tax reductions applicable to future years for expenditures on mine development, mining and oil properties, costs of participation in certain mining companies, and depreciation claimed in the determination of taxable income but not charged to earnings.

6. Capital stock

At a special General Meeting of Shareholders held on April 24, 1970, the shareholders ratified a by-law (subsequently confirmed by Supplementary Letters Patent) subdividing the authorized capital stock of the Company on a 3-for-1 basis from 4,000,000 shares to 12,000,000 shares without nominal or par value.

The amounts stated as earnings per share and dividends per share reflect the above subdivision of capital stock. Earnings per share have been calculated on the basis of the weighted average number of shares outstanding during each year.

7. Share option plan

The Hudson Bay Mining and Smelting Co., Limited 1968 Share Option Plan for Full Time Officers and Key Employees provided for the granting of options on 168,000 unissued shares (after 3-for-1 split in 1970) at prices not less than 95% of the market value (full market value in the case of United States citizens) on the day the option is granted.

On January 23, 1970, options for 54,075 shares were granted at \$27.01 per share (\$28.44 for United States citizens), none of which have been exercised. During 1970, options for 300 shares granted during 1968 were exercised for which the Company received \$5,415 cash, and options for 825 shares were terminated. As of December 31, 1970, options on 53,850 shares were outstanding and 38,325 shares were available for future grants of options.

Auditors' report

To the shareholders of
Hudson Bay Mining and Smelting Co., Limited:

We have examined the consolidated statement of financial position of Hudson Bay Mining and Smelting Co., Limited as at December 31, 1970

and the consolidated statements of earnings, retained earnings and source and application of funds for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion these consolidated financial statements present fairly the financial position of the companies as at December 31, 1970, and

the results of their operations and the source and application of their funds for the year then ended, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year (after revision of the financial statements for that year as explained in note 1 to the financial statements).

Deloitte, Haskins & Sells
Chartered Accountants.

Toronto, Canada, February 19, 1971.

Ten-year record

1961-1970

production

	copper (tons)	zinc (tons)	cadmium (lbs.)
61	39,460	74,869	307,757
62	37,023	80,766	317,495
63	37,301	79,596	316,050
64	40,417	71,012	329,552
65	39,726	71,435	368,208
66	38,268	73,331	352,405
67	38,403	72,061	352,042
68	41,660	80,308	330,872
69	42,302	79,711	333,959
70	42,178	78,622	338,343

earnings and dividends

	operating revenue (\$)	investment and other income (\$)	net earnings (\$)
61	47,924,413	905,800	10,971,941
62	49,396,811	1,040,677	11,302,305
63	51,224,671	1,252,771	11,737,063
64	56,377,535	1,435,381	13,095,323
65	61,702,298	1,486,058	15,990,045
66	69,112,153	1,454,342	19,116,388
67	72,351,946	1,612,232	16,718,617
68	79,699,926	1,965,946	21,134,880
69	95,674,349	2,238,424	29,698,514
70	87,160,970	1,765,199	19,563,052

ore milled and ore reserves

	milled (tons)	reserve (tons)	copper (%)
61	1,683,000	15,286,100	2.7
62	1,702,000	14,934,000	2.8
63	1,619,000	15,115,500	2.9
64	1,585,000	16,627,400	3.0
65	1,640,000	16,842,400	3.0
66	1,690,000	16,765,300	2.9
67	1,588,000	16,884,600	3.0
68	1,610,000	17,612,300	3.0
69	1,702,000	18,048,600	3.0
70	1,709,000	19,115,100	2.9

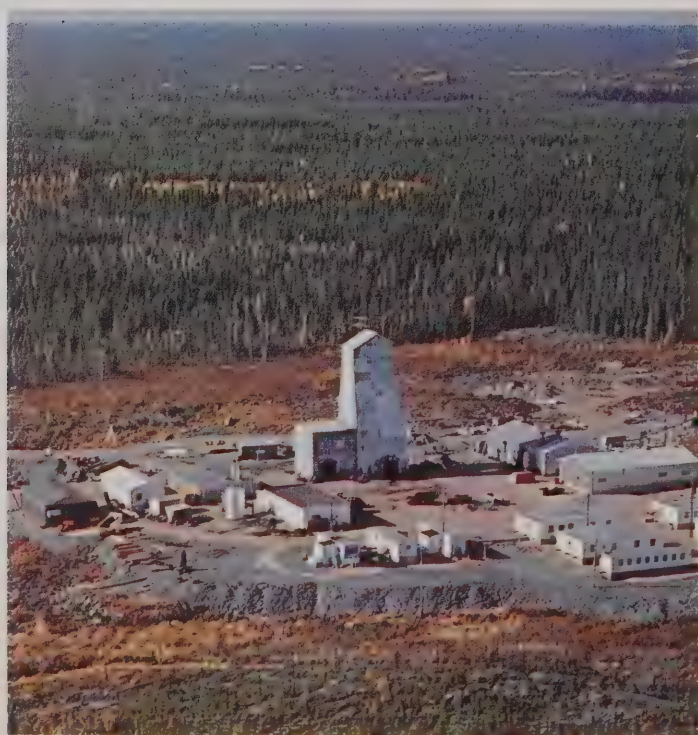
gold (ozs.)	silver (ozs.)	selenium (lbs.)	
88,897	1,278,496	87,600	61
85,552	1,185,596	76,740	62
83,878	1,167,160	77,429	63
80,174	1,179,888	70,335	64
82,189	1,215,359	62,061	65
71,202	1,022,009	76,602	66
70,615	1,040,098	63,316	67
59,602	970,674	86,346	68
52,410	818,209	91,866	69
55,188	865,141	89,808	70

adjusted to reflect the 3-for-1 stock split in 1970

earnings per share (\$) *	dividends (\$)	dividends per share (\$) *	
1.33	8,273,919	1.00	61
1.37	8,273,919	1.00	62
1.42	8,963,412	1.08 $\frac{1}{3}$	63
1.58	9,652,905	1.16 $\frac{2}{3}$	64
1.93	10,342,399	1.25	65
2.31	11,169,791	1.35	66
1.98	10,999,845	1.30	67
2.47	11,551,067	1.33 $\frac{1}{3}$	68
3.29	13,252,815	1.46 $\frac{2}{3}$	69
2.16	10,698,234	1.18 $\frac{1}{3}$	70

inc (%)	gold (oz./ton)	silver (oz./ton)	
4.9	0.06	0.9	61
4.9	0.06	0.9	62
4.7	0.05	0.8	63
4.3	0.05	0.8	64
4.5	0.05	0.8	65
4.4	0.04	0.7	66
4.1	0.04	0.7	67
3.8	0.04	0.6	68
3.5	0.04	0.6	69
3.3	0.04	0.6	70

Two new base-metal mines, Anderson Lake Mine and Dickstone, were brought into production in November, 1970, by Hudson Bay Mining, increasing to eight the number of producing mines in the Flin Flon-Snow Lake area in northern Manitoba. Mining operations at Anderson Lake Mine (shown immediately below), a wholly owned copper producer, feature trackless haulage of ore, using Scoop Trams (lower right) and an underground conveyor. The Dickstone (lower left) is a copper-zinc mine financed and operated by Hudson Bay Mining for Dickstone Copper Mines Ltd. for 75% of the profits.



Review of operations

Metals division

Production

Metal production during 1970 was as follows: refined copper, 84,355,481 lbs.; slab zinc, 157,243,095 lbs.; cadmium, 338,343 lbs.; selenium, 89,808 lbs.; gold, 55,188 ozs.; and silver, 865,141 ozs.

Also produced and sold were 851 tons of lead concentrates containing 310 ozs. of gold, 27,507 ozs. of silver, and 858,598 lbs. of lead.

Producing mines

Two new mines, the Anderson Lake Mine and the Dickstone Mine, were brought into production in 1970, increasing to eight the number of producing mines in the Flin Flon-Snow Lake area.

Ore mined from these eight mines during the year totalled 1,709,500 tons, an increase of 8,500 tons over production in 1969. Details of this production, with average assays, are as follows:

mine	tons	average assays				
		Au oz./ton	Ag oz./ton	Cu %	Zn %	Pb %
Flin Flon	622,300	0.05	0.8	1.8	3.8	—
Osborne Lake	319,400	—	—	4.0	1.6	—
Chisel Lake	281,500	0.03	0.9	0.8	10.3	0.3
Stall Lake	179,200	0.06	0.6	4.3	0.7	—
Flexar	120,700	0.04	0.2	3.9	0.4	—
Schist Lake	100,700	0.03	1.0	4.3	5.9	—
Anderson Lake	59,600	0.03	0.3	3.8	—	—
Dickstone	26,100	0.02	0.4	2.1	3.7	—

The two main sources of ore in the Flin Flon Mine continued to be pillars and remnants, providing 95% of its production. Development of the upper north section of the Osborne Lake Mine continued and development of the lower south zone was started.

At the Schist Lake Mine, stope development below the 2,900-ft. level in the south end of the mine was continued. The 1,850-ft. level was driven north to explore below the Mandy zone.

Production at a rate of 1,000 tons per calendar day at the Anderson Lake Mine started on November 9. An ore conveyor from the headframe to the railroad nearby is scheduled to be completed early in 1971.

At the Dickstone Mine production was started on November 2 at a rate of 600 tons per calendar day after the completion of development work above the 1,150-ft. level in both No. 1 and No. 2 ore zones.

Production at the Stall Lake Mine was halted temporarily in November so that an internal shaft could be sunk from the present bottom level on the 2,850-ft. horizon. It is planned to establish five new levels from the new shaft with the deepest level at the 3,600-ft. horizon.

A drift on the 1,950-ft. level is being driven eastwards from the shaft to permit exploration drilling.

The Chisel Lake and Flexar Mines produced as expected during the year.

Mines under development

The Ghost Lake Mine is being developed by trackless methods with the driving of a decline using load-haul-dump equipment.

The production shaft was collared at the White Lake Mine in late February. Shaft-sinking started in September and by year-end the shaft was 766 ft. below the collar. The surface plant was completed during the summer.

Development of the Wellgreen Mine in the Yukon and construction of a 600-ton-per-day concentrator 10 miles from the minesite are well underway. Living quarters are being constructed near the concentrator. A newly built road services the mine and ore will be trucked to the concentrator. The Wellgreen Mine is owned by Hudson-Yukon Mining Co., Limited which is 94%-owned by Hudson Bay Mining. Hudson-Yukon on April 2 signed a five-year contract to ship annually 30,000-60,000 tons of copper-nickel concentrates to Sumitomo Metal Mining Co., of Tokyo. Production is expected to commence early in 1972. Hudson Bay Mining will manage and operate the Wellgreen Mine.

Exploration

Hudson Bay Exploration and Development Company Limited carried out exploration on its own behalf in Manitoba, Saskatchewan and the Yukon Territory and jointly with Anglo American Corporation of Canada Limited in the Yukon, British Columbia, Ontario and Quebec. Diamond-drilling on all Canadian projects totalled 185,559 ft. and tested 336 geophysical anomalies.

A copper-zinc orebody was discovered nine miles southeast of Flin Flon. This was named the Centennial Mine in commemoration of Manitoba's 100th year as a province. A reserve of approximately 1.4 million tons of 2.06% copper and 2.6% zinc is indicated to the 1,200-ft. level. The orebody is still open at depth.

Copper mineralization was discovered in a zone 54 miles east of Flin Flon. This zone, named Reed Lake, contains 787,000 tons grading 2% copper to a depth of 1,000 ft. It is open at depth. Further exploration by diamond-drilling will be done in 1971. The Rail Lake zone, discovered several years ago in the same general area, contains 325,000 tons of 3% copper to a depth of 1,000 ft.

In the Yukon, approximately one mile of underground workings at the adit level was completed on the Company's Tom Claims. These workings provide access for an underground diamond-drilling program to explore the east and west silver-lead-zinc zones at depth. The drilling program is in progress.

Options were taken by the Company on five properties during 1970 and at year-end 12 options continued in good standing. The Company's personnel manage and direct work on all options. In addition to the options, the Company holds 2,376 claims, 207,860 acres in claim blocks, and one prospecting permit totalling 245.16 sq. miles.

Hudson Bay Air Transport Limited, a wholly owned subsidiary of the Company, flew 2,718 hours, or 332,384 miles, largely in support of exploration programs.

Concentrator

A Gepac 4000 computer was installed in December to increase the efficiency of the flotation section by automating control methods. A long-range testing and development program has been scheduled.

The concentrator treated 1,709,000 tons of ore and exceeded last year's total by 7,000 tons. Ores from the Dickstone and Anderson Lake mines, which were first received in November, contributed 1.53% and 3.48% of the annual total respectively. The Flin Flon Mine contributed 36.40%; Osborne Lake Mine, 18.69%; Chisel Lake Mine, 16.47%; Flexar Mine, 7.06%; Schist Lake Mine, 5.89%; and Stall Lake Mine, 10.48%.

Ore treated and the average assays for 1970 and 1969:

	1970	1969
tons of ore	1,709,000	1,702,000
average tons per day	4,680	4,660
Au — oz. per ton	0.04	0.03
Ag — oz. per ton	0.6	0.6
Cu — %	2.7	2.7
Zn — %	3.9	4.3
Pb — %	0.2	0.2

The following concentrates were produced from ore treated:

concentrates	tons	assays				
		Au oz./ton	Ag oz./ton	Cu %	Zn %	Pb %
copper	272,300	0.15	2.4	15.9	4.6	0.3
zinc	102,100	0.05	1.1	0.8	47.4	0.3
lead	892	0.35	32.1	0.9	4.9	57.8

A total of 1,333,200 tons of flotation tailings was produced during the year. Of this amount, 772,200 tons were treated for partial recovery of gold and silver in the cyanide section.

A total of 1,294,500 tons of tailings was stockpiled and the balance used as mine backfill.

The total tonnage and approximate assays of tailings stockpiled to date are as follows:

tons	assays					
	Au oz./ton	Ag oz./ton	Cu %	Zn %	S %	Fe %
49,773,500	0.02	0.3	0.2	0.8	23.4	26.7

Zinc refinery

A total of 157,243,095 lbs. of zinc was produced in 1970. This was 1.37% less than production in the previous year. Several grades of zinc were produced, with the Special High Grade brand for the diecasting trade having an average purity of 99.9977%.

Production of metallic cadmium during 1970 was 338,343 lbs., compared with 333,959 lbs. in the previous year.

The following materials were treated:

	tons	assays			
		Au oz./ton	Ag oz./ton	Zn %	Cu %
HBMS concentrates	102,900	0.05	1.1	47.4	0.8
oxide	41,200	—	0.6	63.1	0.8
purchased concentrates	36,800	—	0.01	56.0	0.03

Production of zinc sulphide residue totalled 49,900 tons, of which 48,800 tons were delivered to the smelter and the remainder stockpiled. Oxide residue produced and stockpiled was 10,900 tons. Stock on hand at year-end was 163,600 tons of sulphide residue and 258,000 tons of oxide residue.

Copper smelter

Hudson Bay copper concentrates treated during the year decreased by 14,773 tons from the previous year. Residues and byproducts decreased by 3,766 tons. Concentrates treated on a toll basis increased by 482 tons and the total tonnage custom-treated accounted for 17% of the output.

	tons	assays			
		Au oz./ton	Ag oz./ton	Cu %	Zn %
HBMS concentrates	271,200	0.15	2.4	15.9	4.6
residues, etc.	76,700	0.17	3.3	2.3	24.7
custom concentrates	33,400	—	—	—	—

The tonnage and metal content of blister copper produced for the Company's account and for shipment to the refinery were as follows:

tons	Au-ozs.	Ag-ozs.	Cu-lbs.	Se-lbs.
42,816	56,029	873,879	84,783,632	139,001

Smelter oxide recovery was 8,648 tons, assaying 29.6% Zn; 3.2% Cu; 1.4% Cd; and 12.2% Pb. This material was delivered to the zinc plant for treatment.

Slag treated in the fuming furnaces totalled 393,000 tons, yielding 32,500 tons of oxide. This oxide, containing 46,862,000 lbs. of zinc, was delivered to the zinc plant for processing to slab zinc.

Research

Under an agreement signed with Sherritt Gordon Mines Limited, Toronto, a team of scientists and engineers from each company is testing the adaptability of a Sherritt Gordon-patented pressure-leach process to Hudson Bay Mining's zinc concentrates.

If successful, the new process would eliminate the discharge of sulphur dioxide gas into the atmosphere from the processing of zinc concentrates at the Company's metallurgical plant at Flin Flon, and make the recovery of zinc more efficient.

The project, expected to be completed within 2½ years, is divided into two phases:

1 — Laboratory work, being done at the Sherritt Gordon Research and Development Division at Fort Saskatchewan, Alberta, will take approximately six months.

2 — Pilot-plant testing which, provided the laboratory results are as satisfactory as expected, will be carried out by Hudson Bay Mining in a pilot plant to be constructed at Flin Flon. The pilot plant would have facilities for pressure leaching, purification and electrolysis. It is estimated it would cost Hudson Bay Mining \$1.2 million to build the plant and \$800,000 to operate it during the testing period.

If pilot-plant results are favorable, the current zinc extraction process would be modified to incorporate the pressure-leach method, thus eliminating conventional roasting procedures.

Environmental studies during the year included the systematic monitoring of both atmospheric and liquid effluents; the initiation of recycling of effluents from the zinc oxide residue storage area for zinc removal and the construction of plant facilities for removal of metallic ions from Schist Lake Mine water.

Plant-scale investigations were started in 1970 on the use of high-grade silica flux as a means of increasing smelter capacity.

Automated process control continued as a joint project by the concentrator and research departments.

Power supply

Churchill River Power Company, a wholly owned hydro subsidiary, and the Company's local thermal plant generated 718,659,000 kilowatt hours in 1970. This was 4,588,000 kilowatt hours less than in 1969.

Precipitation in the western and southern portions of the watershed was good. As a result, the water level of Reindeer Lake increased by 1 ft., thus averting a possible water shortage in the spring of 1971.

Personnel and administration

At the end of 1970, the Company had a total of 2,775 employees at Flin Flon and Snow Lake, 57 more than in the previous year.

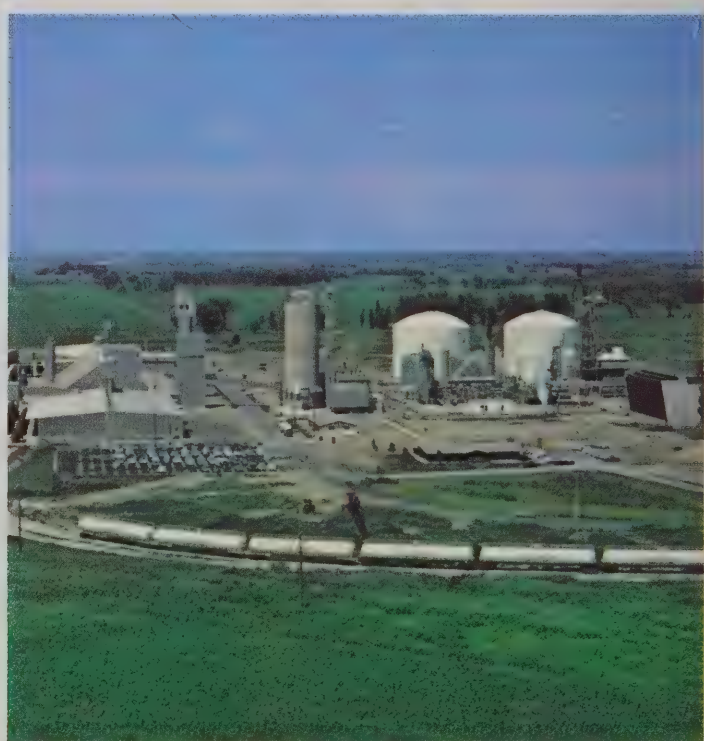
Total membership in the 25-Year Club reached 1,001, of which 562 were on the payroll at year-end.

A new three-year labor agreement which provides three wage increases totalling approximately 30% and increased fringe benefits was signed in September by the Company and local unions of the United Steel Workers and the International Union of Operating Engineers. The agreement became effective October 1 and covers union members at Flin Flon and Snow Lake in Manitoba. The increased hourly rates were retroactive to August 16 and are comparable with rates paid by the other two major mining companies in Manitoba.

Negotiations with unions representing a number of trades not covered in the Steel Workers' agreement were unsuccessful and the matter was referred to a federally appointed conciliation board. At year-end the board was still reviewing the matter.

Twenty additional homes were constructed at Snow Lake during the year for resale to employees. At year-end, 19 had been sold and occupied. A total of 172 housing units has now been constructed at Snow Lake.

Sylvite of Canada division of Hudson Bay Mining shipped its first car of potash on Sept. 25, 1970, from the mine and refinery complex near Rocanville, Saskatchewan, 26 months after shaft-sinking was started. By year-end 1970, construction of the product storage building was 75% complete. The first carload of potash was shipped to Terra Chemicals International, Inc., (lower right) Sioux City, Iowa, in which Hudson Bay Mining has a 15% interest.



Potash division

Sylvite of Canada



The first potash produced by the Sylvite of Canada Division was loaded and shipped on September 25 — 26 months after shaft-sinking began. By year-end a total of 16,246 tons of muriate of potash had been produced. Construction expenditures during the year totalled \$21,540,000. Total expenditure on the project at year-end was \$61,772,000. Financial forecasts indicate that the final cost of the entire project will be within the original budget.

During the year the service shaft advanced 258 ft. to a final depth of 3,250 ft. below the collar. The production shaft advanced 350 ft. to a final depth of 3,340 ft. below the collar. As originally planned, watertight cast-iron tubbing was installed in both shafts to seal off water-bearing formations, as was done in the Blairmore. Salt-protection rings were installed in both shafts to protect the Prairie Evaporite formations from water intrusion. A total of 146 ft. of tubbing was placed in both shafts last year. The decision to install tubbing in all water-bearing zones proved to be beneficial because no time was lost during shaft-sinking for grouting purposes, consequently both shafts were completed on schedule.

A combination lining of concrete and polyurethane was installed from the concrete plug at the bottom of the shafts to the top of the salt section. The polyurethane foam was poured to form a cushion 1 ft. thick between the rock salt and the concrete lining surrounding the shaft. The resilience of the polyurethane foam absorbs the expansion of the rock salt, because of ground pressure, thus preventing failure of the concrete lining.

Potash stations were cut and, after necessary preparation by the contractor for takeover by Sylvite, both shafts were accepted in June.

The service shaft hoisthouse was completed and a friction-type hoist was installed.

Construction of the production headframe was 90% complete at year-end. The production hoist was installed and the shaft was ready for hoisting ore at year-end.

A two-rotor mining machine was assembled underground and started developing the mine on July 29. Ore was hauled to the service shaft in 20-ton-capacity shuttle cars. By year-end, ore and waste excavated totalled 154,870 tons. In December preparations were underway to lower the first of two 4-rotor mining machines underground where it was to be re-assembled and put into operation in January, 1971.

Good progress was made during the year in mine planning and purchasing mine equipment. Installation of electrical equipment, including both motor-generator sets and hoist consoles, was completed.

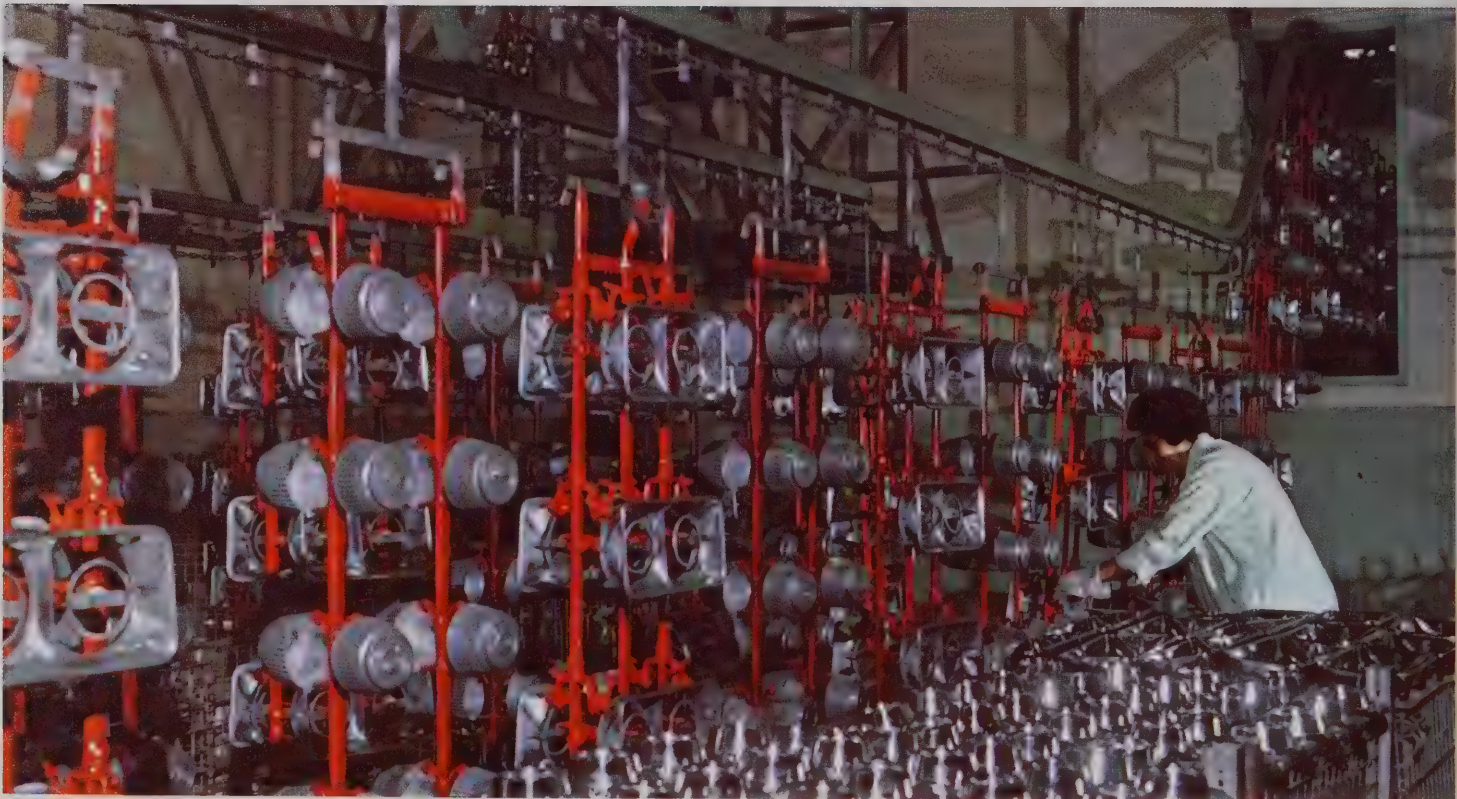
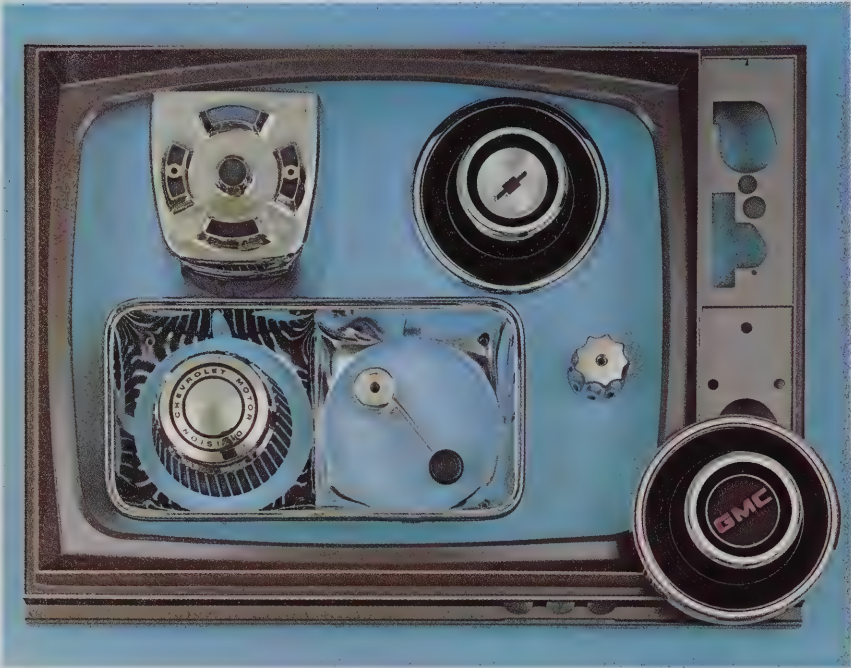
A 90,000-ton product storage building with rescreening facilities was 75% complete at year-end. Construction of a 70,000-ton product storage building was started at Vancouver Wharves Ltd. in North Vancouver and was 95% complete at year-end.

A 20-acre portion of the brine reclaim pond was relined and an additional 65 acres of tailings pond were completed during the year.

Production by Sylvite is limited by the Saskatchewan Government's pro-rationing formula to 263,000 tons of muriate of potash during the first six months of 1971. On an annual basis, Sylvite has been allocated a production rate of 40% of the 1.2-million-ton design capacity of the refinery. However, even at this reduced tonnage it appears that Sylvite should make a positive contribution to Hudson Bay Mining's overall cash flow.

The allowable production tonnage to June, 1971, has been committed to sale, largely through Terra Chemicals International Inc., of Sioux City, Iowa, a U.S. fertilizer manufacturer in which Hudson Bay Mining has a 15% interest.

Hudson Bay Diecastings Limited, a wholly owned subsidiary of Hudson Bay Mining, manufactures chrome-plated zinc-base diecastings for the automotive and appliance industries. Shown here are: a display of finished components; automobile window regulator handles being assembled; zinc castings moving on an endless conveyor to a series of plating tanks.



Subsidiary and affiliated companies

Hudson Bay Diecastings Limited



Sales and profits in 1970 were lower than in 1969, the direct result of the strike at General Motors and generally lower sales of 1970 model-year automobiles. In addition, there was a reduction in the number of components sold for the 1971 model-year automobiles, compared with sales for 1970 models. Other factors contributing to the drop in earnings were: higher costs of raw materials such as chemicals, cartons and operating supplies; higher labor costs and the freeing of the Canadian dollar. A two-year labor agreement covering plant employees became effective October 1, 1970.

Fewer tons of zinc were melted in 1970 than in 1969, the result of reduced sales and a change in product mix from larger, heavier items to smaller, lighter, plated components. The prospects for 1971 are for a modest increase in both sales and earnings.

Francana Minerals Ltd.



Production of sodium sulphate in 1970 totalled 32,588 tons, compared with 30,564 tons in 1969. As was the case in 1969, production was limited by the volume of sales, not by plant capacity.

Inventory at the plant at year-end totalled 96,000 cubic yards of crude Glauber's salt, compared with 146,000 cubic yards in 1969.

Sales in 1970, the second year of full operations, totalled 34,216 tons, compared with 32,126 tons in 1969. The increase in sales contrasts sharply with the 17% drop in sales during 1970 experienced by the sodium sulphate industry in Saskatchewan as a whole. Highly competitive marketing conditions prevailed throughout the year, with increased competition in markets overseas and in the U.S. from cheap Chilean salt cake. A strike by towboat operations on the West Coast and strikes in the pulp industry reduced pulp production and demand for salt cake. In addition, the freeing of the Canadian dollar put Canadian

sodium sulphate producers at a disadvantage in international markets.

Francana Minerals operated at a small loss in 1970 after making allowances for depreciation, payment of interest, etc. Experimental work aimed at producing a special product for the detergent industry was continued. At year-end, the detergent industry was still evaluating the product and no decision had been reached. However, Francana personnel are optimistic that the detergent industry may become a new market for this product. Sales of 50,000-60,000 tons are projected for 1971. If this objective is reached, the company will become a profitable operation.

Zinc Oxide Company of Canada Limited



Profits during 1970 were slightly lower than in 1969 because of increased operating costs, highly competitive markets and slightly lower sales of zinc oxide and zinc dust.

Several factors curtailed sales: the overall slowdown throughout industry; lower production by the rubber industry because of fewer sales of automobiles and the prolonged strike at General Motors.

Production of zinc oxide was at 98% of plant capacity and production of zinc dust was at 80%.

The sales staff was reorganized and expanded in 1970. In order to give customers more efficient and faster service, the Ontario Sales Office was moved from downtown Toronto and integrated with the warehouse in Rexdale, a Toronto suburb. Shipping was made more efficient and less costly by full-time use of a leased tractor and semi-trailer for long-distance hauling.

Plant operations were normal throughout the year. A new two-year labor agreement became effective December 1, 1970.

Francana Oil & Gas Ltd.



Crude oil sales in 1970 increased 11% to 1,003,000 barrels but natural gas sales decreased 12% to 1.3 billion cubic feet. The comparable figures for 1969 are 903,000 barrels of oil and 1.5 billion cubic feet of gas.

Income from all sources increased 17% from \$2,094,000 to \$2,457,000. Earnings, after provision for deferred taxes, were \$904,000, compared with \$769,000 in 1969. The Company on September 30, 1970, redeemed out of capital 3,200 of the issued and outstanding 5% cumulative redeemable convertible preferred shares at the redemption price of \$100 per share.

Proven crude oil reserves at year-end were 13,574,000 barrels, an increase of 1,225,000 barrels, after allowing for production during the year. Proven gas reserves at year-end were 32.9 billion cubic feet, 4.5 billion cubic feet more than at year-end 1969.

In order to participate effectively in active oil and gas exploration areas in the United States, a wholly owned U.S. subsidiary company named Francana Exploration Inc. was incorporated in September. The first participation was in a well in the Fairview Area of Montana which proved to be an oil discovery. Agreements concerning three other ventures, including a secondary oil recovery project in Montana, were concluded in December and these projects will be evaluated during 1971.

The year's exploration and development program by the Company and Francana Exploration Inc. included participation in the drilling of 40 gross wells, equivalent to 16.74 net wells which resulted in 1.10 net Francana oil producers, 2.34 net gas wells and 13.30 net dry holes. A well proving an oilfield extension was followed by two development oil wells in the Viewfield Area of Saskatchewan. Three development gas wells were completed in the Medicine Hat Area, a gas discovery was made in the Holmberg Area and a gas-field extension in the Wainwright Area, all in Alberta. In addition, 14 wells were drilled by others on or offsetting Francana acreage at no cost to Francana. This program, which served to evaluate Francana's acreage, yielded three potential gas wells, one potential oil well, nine dry holes and one well was still drilling at year-end. Francana retains a working interest

in two gas producers and a gross overriding royalty on the third gas well.

Toward year-end, there was considerable international pressure to increase the price of crude oil. During December, price increases of 25¢ per barrel were announced by Canadian purchasers, affecting all Francana production. Assuming the price increase is maintained throughout 1971, Francana's gross revenue from existing oil production, which accounts for 80% of total income, will increase by approximately 10%.

As reported in Hudson Bay Mining's Annual Report for 1969, Francana Oil & Gas was converted from a private to a public company in 1969 and an underwriting agreement was concluded in December of that year.

In January, 1970, a total of 700,000 treasury shares was sold to the public at \$5.00 per share, which netted Francana \$3.2 million. This new capital is being used to finance on a long-range basis an active exploration, development and acquisition program.

At year-end 1969, Hudson Bay Mining owned 60% of the common shares of the capital stock of Francana. After Francana's conversion to a public company, Hudson Bay Mining's interest was reduced to 51.5%.

Throughout 1970, Hudson Bay Mining periodically purchased Francana common shares, increasing its interest to 52.4% by year-end.

Hudson Bay Holdings Limited

This wholly owned Bahamian subsidiary, which in the past held investments in South African gold and diamond shares but which has been inactive for more than a year, was liquidated during 1970. All funds were repatriated to the parent company in Canada.

Hudcana Development Corporation Ltd.

Hudcana, a wholly owned subsidiary of Hudson Bay Mining, holds the Company's interests in Francana Minerals Ltd. (60%) and Tombill Mines Limited (38%). There was no change in either of these holdings during 1970.

Location maps

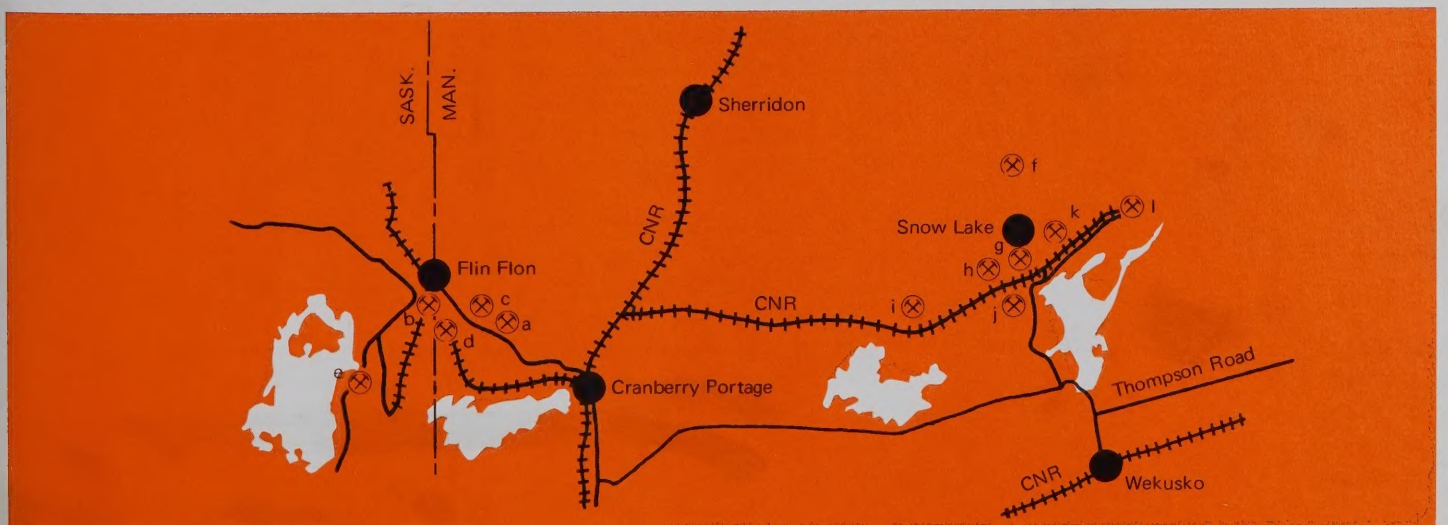
wholly or partly owned
Canadian properties
of Hudson Bay Mining
and Smelting
Co., Limited

Map of Canada

- 1 Hudson-Yukon Mining Co. Limited
- 2 Stikine Copper Limited
- 3 Baffinland Iron Mines Limited
- 4 Churchill River Power Company Limited
- 5 Francana Minerals Ltd.
- 6 Francana Oil & Gas Ltd.
- 7 Sodium Sulphate (Saskatchewan) Ltd.
- 8 Sylvite of Canada
- 9 Manitoba Chromium Limited
- 10 Hudson Bay Diecastings Limited
- 11 Zinc Oxide Company of Canada Limited
- 12 Durham Industries (Canada) Ltd.

Map of Flin Flon / Snow Lake Area

- a Centennial Mine
- b Flin Flon Mine
- c White Lake Mine
- d Schist Lake Mine
- e Flexar Mine
- f Wim Mine
- g Anderson Lake Mine
- h Chisel Lake Mine
- i Dickstone Mine
- j Ghost Lake Mine
- k Stall Lake Mine
- l Osborne Lake Mine



Operating personnel

**Base-metal
mining, refining
and smelting**

Flin Flon

D. J. Robertson, general manager
J. R. G. Sadler, assistant general manager
G. H. McIntosh, assistant to the general manager
L. G. Johnson, personnel manager
P. M. T. Healey, administration manager
J. R. Bray, superintendent of mines
A. E. Stephansson, assistant superintendent of mines
J. H. Black, mine superintendent — Flin Flon Area
L. R. Nilsen, mine superintendent — Snow Lake Area
R. L. Price, Western superintendent of exploration
P. L. Martin, chief mining geologist
J. N. Kirkbride, research superintendent
J. E. Goodman, concentrator superintendent
W. E. McFadden, zinc plant superintendent
G. H. Kent, smelter superintendent
M. N. Collison, mechanical and construction superintendent
S. H. Evans, electrical superintendent
F. H. Gummerson, powerhouse superintendent
G. M. Watt, surface and transportation superintendent
G. H. Dash, hydro plant superintendent
N. Iannone, safety superintendent
J. Putney, purchasing agent

**Sylvite Division
Potash mining
and refining**

Rocanville

J. S. Warick, general manager
D. C. Smith, production manager
W. G. Schultz, mine superintendent
F. J. Greeves, mill superintendent
N. J. Cyr, administration manager

Head Office

Toronto

Dr. J. B. Howkins, chief geologist
R. B. Cairns, Eastern superintendent of exploration
A. N. C. Gillies, traffic manager
J. D. Purvis, manager — metal sales
M. A. de Vette, chief electrical engineer
A. Epp, manager — public relations
J. G. Hartsig, manager — potash sales
A. T. O'Hara, manager — development group

**Exploration
offices**

Vancouver Whitehorse Thunder Bay

R. A. Freberg, resident geologist
R. T. McIntosh, resident geologist
J. D. Friesen, geologist

**Subsidiary
companies**

Montreal Toronto Calgary Regina

D. B. Clark, general manager — Zinc Oxide Company of Canada Limited
G. F. Clark, general manager — Hudson Bay Diecastings Limited
N. D. Knowles, general manager — Francana Oil & Gas Ltd.
R. V. Tomkins, general manager — Francana Minerals Ltd.

Principal addresses

Hudson Bay Mining and Smelting Co., Limited,
P.O. Box 28, Toronto-Dominion Centre, Toronto 1, Ontario.

Sylvite of Canada Division of Hudson Bay Mining and Smelting
Co., Limited,
P.O. Box 270, Rocanville, Saskatchewan.

Hudson Bay Exploration and Development Company Limited,
P.O. Box 28, Toronto-Dominion Centre, Toronto 1, Ontario.
Flin Flon, Manitoba.
1695 - 555 Burrard St., Bentall Centre Tower No. 2,
Vancouver 1, B.C.
Box 2480, Whitehorse, Yukon Territory.
Box 365, Thunder Bay "P", Ontario.

Hudson Bay Diecastings Limited,
P.O. Box 1050, Brampton, Ontario.

Zinc Oxide Company of Canada Limited,
P.O. Box 40, Station D, Montreal 22, Quebec.

Hudson-Yukon Mining Co., Limited,
Flin Flon, Manitoba.

Francana Oil & Gas Ltd.,
401 Pacific 66 Plaza, 700 - 6th Ave. S.W., Calgary 1, Alberta.

Francana Minerals Ltd.,
520 Bank of Canada Bldg., Regina, Saskatchewan.

